

## ON TWO NEW SPECIES OF EUCALYPTUS.

BY R. T. BAKER, F.L.S., CURATOR, TECHNOLOGICAL MUSEUM,  
SYDNEY.

(Plates X.-XI.)

EUCALYPTUS LEVOPINEA, sp. nov.

“Silver-Top Stringybark.”

A very tall tree in favourable situations. Bark fibrous but brittle, a feature that distinguishes it from that of “Red Stringybark,” *E. macrorhyncha*, F.v.M., and “White Stringybark,” *E. eugenioides*, Sieb. ; ultimate branches smooth. Young leaves alternate or scarcely opposite, broad at the base but not cordate, acuminate, about 3 inches long, the intramarginal vein removed from the edge, the lateral ones very distinct on the under side, scarcely showing on the upper surface. Mature leaves varying in size and shape, mostly very oblique, of a dark green colour and shining on both sides, lanceolate, falcate, acuminate, the intramarginal vein removed from the edge, lateral veins fairly distinct. Petiole varying from  $\frac{1}{2}$  to 1 inch. Umbels axillary bearing about 5 to 7 flowers; stalk flattened, under an inch long, stalklet varying from 3 to 8 inches long, lid hemispherical, shortly acuminate, calyx not angular. Stamens all fertile, inflexed in the bud. Anthers divergent from the connective which surmounts them and is very prominent, opening by longitudinal slits. Roof of ovary flat and free from the placenta.

Fruits hemispherical, petiolate; the rim very variable, at first thick and flat or truncate, and then as it matures gradually becoming exserted and eventually quite domed, when it is not easy to distinguish it from *E. macrorhyncha*, F.v.M.

**Timber.**—A very hard, close-grained, interlocked, pale brown coloured timber, difficult to distinguish from *E. pilularis*

(Blackbutt), and no doubt of equal excellence. It is durable in the ground, and free from gum-veins as a rule. Suitable for bridge-decking, wood-blocking, posts, rails, and general building purposes requiring a hard durable timber. In the case of "Red" and "White" Stringybark, the bark soon becomes detached after the timber is felled, but in this species the bark remains attached till the timber decays.

**Kino.**—The exudation belongs to the ruby group, consisting principally of a tannic acid and water. Contains neither gum like the kinos of the "Ironbarks," nor eudesmin or aromadendrin like the "Boxes." In constitution it is practically identical with that of *E. dextropinea*, described below.

**Oil**—A deep reddish colour, and it could not be distinguished from that of *E. dextropinea* except by chemical analysis. The leaves gave a yield of 0·66 per cent, and it consists very largely of lævo-rotatory pinene, chemically identical with the lævo-rotatory pinene obtained from trees of the Natural Order Coniferae.

For the chemistry of this pinene see paper by my colleague, Mr. H. G. Smith, Proc. Roy. Soc. N.S.W., Oct., 1898.

**Hab.**—Nullo Mountain, Rylstone (J. Dawson), Never Never Mountain, Rylstone (R.T.B.), Gulf Road, Rylstone (R.T.B.)

This tree has always been regarded by local residents of the Rylstone district as quite distinct from any of the other "Stringybark" trees in the locality, owing to its peculiar bark and tough wood, and the glinting of the leaves in the sun, making them appear glaucous, and hence its vernacular name of "Silver-Top Stringybark." When seen growing in its native habitat it somewhat resembles *E. macrorhyncha*, F.v.M., and the mature fruits with the domed rim and well exerted valves might easily lead one to diagnose it as that species, but it differs therefrom in its hard durable timber, and also from it and cognate species by its characteristic bark, as well as in its hemispherical operculum, terete calyx tube, in its oblique leaves, and the physical constituents of its leaves and oil. Except for its domed fruits there is little to connect it botanically with *E. macrorhyncha*, F.v.M.,

from the leaves of which is extracted (1) the dye *myrticolorin*; (2) an oil, very rich in the new solid camphor or stearoptene *eudesmol*, and also *cineol*. These bodies are entirely absent from the leaves of this particular Eucalypt, and the oil is almost entirely composed of levo-rotatory *pinene*.

The presence of pinene of course allies it with the other species described in this paper, whilst the optical characters remove it from that species. It differs from *E. capitellata* and *E. eugenioides* in the shape of its fruits, its bark, buds, and leaves, and the chemical constituents of its oil, but yet it is a "Stringybark," and the timber shows affinities with that group of Eucalypts, while the hemispherical base and size of the fruits are not unlike those of *E. capitellata*. In botanical sequence it may be placed after *E. capitellata*.

It is distinguishable from *E. obliqua* by its fruits and timber as well as its oil, but resembles that species somewhat in the shape of its leaves and buds.

It differs from *E. dextropinea* of this paper in its fruits never having a countersunk rim, the superior quality of its timber, and the presence of a dextro-rotatory pinene in its essential oil. The leaves and buds of the two are identical.

The oblique leaves and immature fruits led me at one time to consider this species as *E. obliqua*, L'Hér., and I so recorded it (Proc. Linn. Soc. N. S. Wales, Vol. x. 2nd Series, 1896).

I have to tender my best thanks to Mr. James Dawson, L.S., of Rylstone, for his great kindness in placing every facility in my way for obtaining complete specimens of "Silver-Top Stringybark," including specimens of the timber and of leaves for oil distillation.

#### E. LEVOPINEA, var. MINOR.

A tree with the same characters as the type, except that the buds are sessile and the fruits smaller. The oil, however, is white and thin, instead of a reddish colour as in the former species; the absence of colour is due to the presence of phellandrene. Otherwise the oil is identical in its chemical composition with that of

the above species, being composed almost entirely of levo-rotatory pinene.

*Hab.*—Barber's Creek (H. Rumsey).

EUCALYPTUS DEXTROPINEA, sp.nov.

“Messmate or Stringybark.”

A tree attaining a height of from 60 to 100 feet or higher, and a diameter up to 5 feet. Bark dark or black on the outside, fibrous and longer in the fibre than that of the other species. Branches smooth for a considerable distance down, but this feature varies. Leaves almost identical with those of *E. levopinea* of this paper, and resembling also those of *E. obliqua*, L'Hér., and *E. Muelleriana*, A.E.H. Young leaves broad, rounded at the base, and very acuminate, opposite or nearly so, on a short petiole, the venation well defined, the intramarginal vein being much removed from the edge. Mature leaves lanceolate, falcate, acuminate, often very oblique, shining on both sides, rather thick, the intramarginal vein removed from the edge. Umbels axillary with about 8 flowers, peduncle flattened, operculum hemispherical, shortly acuminate. Calyx tube obconical, stalklet 4-6 lines long. Buds longer and larger than those of *E. levopinea*, sp.nov.

Anthers reniform, connected above by a prominent connective, valves opening by longitudinal slits. Ovary flat-roofed.

Fruits 4 to 6 lines in diameter, hemispherical, truncate to rounded, occasionally domed, rarely countersunk, valves slightly exerted.

*Hab.*—Monga, on granite formation, but in soil that is fairly rich (W. Bäuerlen); Barber's Creek, mostly in the gullies (H. Rumsey).

It is allied in some of its characters to *E. obliqua*, L'Hér., viz.: the shape of the mature leaves, venation, buds, and in one particular form of fruit which has a contracted orifice and countersunk rim, but their sucker leaves are quite distinct, and the fruits are mostly hemispherical and usually with a thickened convex rim. The individual fruit figured by Baron von Mueller in his plate of *E.*

*obliqua* in the *Eucalyptographia*, much resembles the fruit of this species. The timber, bark, and constituents of the oils of the two species are quite distinct, but herbarium specimens of them might easily be considered as belonging to one species.

The form of fruit referred to above is common also to *E. pilularis*, *E. stricta*, *E. Muelleriana*, *E. piperita*, but its other specific characters are too marked for it to be ranked with any of these.

It differs from *E. macrorhyncha* and *E. capitellata* in the nature of its timber, its fruits, bark, bud, and oil. The leaves do not contain any *myrticolorin*.

It bears in some respects alliance to *E. laevopinea*, but the bark is more fibrous and persistent, the timber is inferior, the fruits never so distinctly domed in the rim, and the valves much less prominent.

*E. Muelleriana* has a much superior timber and a very different bark to *E. dextropinea*. The leaves of the former are shining only on one side, and its fruits and buds are distinctly different.

It differs from *E. laevopinea* in the shape of its fruits, its inferior timber and nature of its bark, and the chemical composition of its oil. The buds and leaves are very similar, in fact, are identical with several other species, and like the venation, no specific difference can be based on these parts of a Eucalypt. As the investigations of cognate species are not yet complete its exact systematic position cannot be given at present, but provisionally it might precede *E. obliqua*.

**Timber.**—A dark brown-coloured timber. Seasons very badly, and is evidently worthless.

**Kino**—See remarks under *E. laevopinea*.

**Oil.**—The percentage of oil obtained from the leaves and branchlets was 0·85, and the material from both localities from which this species was obtained gave almost identical results both in yield and percentages on re-distillation. The constituents of both oils were almost identical, consisting largely of dextro-rotatory pinene having a very high rotation and chemically

the same as the dextro-rotatory pinene obtained from the Coniferae.

For the chemistry of this pinene, see paper by my colleague, Mr. H. G. Smith, F.C.S., Proc. Roy. Soc. N.S.W. Oct., 1898.

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EXPLANATION OF PLATES.

Plate x.

*E. lavopinea.*

Fig. 1.—Sucker leaves.

Fig. 2.—One of the larger leaves.

Fig. 3.—Twig, with buds.

Fig. 4.—Section of bud (enlarged).

Fig. 5.—Anther, back and front view (enlarged).

Figs. 6-9.—Fruits.

Fig. 10.—Buds of *E. lavopinea*, var. *minor*.

Plate xi.

*E. dextropinea.*

Fig. 1.—Sucker leaves.

Fig. 2.—One of the larger leaves.

Fig. 3.—Twig, with buds.

Fig. 4.—Section of bud (enlarged).

Fig. 5.—Anther (enlarged).

Figs. 6-10.—Fruits.